

Integrated Photonics for Adaptive Discrete Multi-carrier Space-based Optical Communication and Ranging

Completed Technology Project (2016 - 2020)



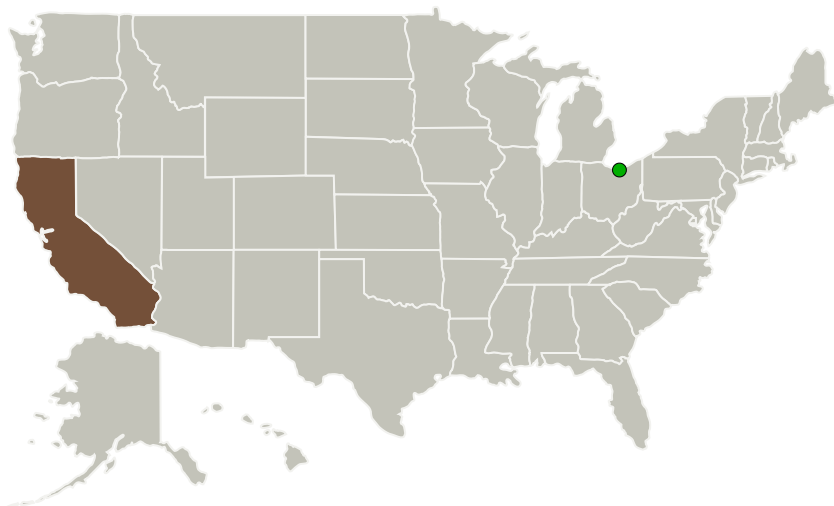
Project Introduction

Spacecrafts and commercial communications satellites operate under stringent power, size and weight constraints but are being required to transfer rapidly-increasing amounts of data back to Earth or across a network in space. Photonic microchips can make energy-efficient, high-bandwidth communication possible while freeing resources for the benefit of science payload instruments. UC San Diego researchers will develop the technology for integrated photonic transceiver components that will comprise a variable-bit-rate coherent laser optical communication and relay network in near-Earth space at wavelengths near 1550 nm.

Anticipated Benefits

Photonic microchips can make energy-efficient, high-bandwidth communication possible while freeing resources for the benefit of science payload instruments.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
University of California-San Diego(UCSD)	Lead Organization	Academia	La Jolla, California
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations

California

Project Website:

<https://www.nasa.gov/strg#.VQb6T0jJzyE>

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

University of California-San Diego (UCSD)

Responsible Program:

Space Technology Research Grants

Project Management

Program Director:

Claudia M Meyer

Program Manager:

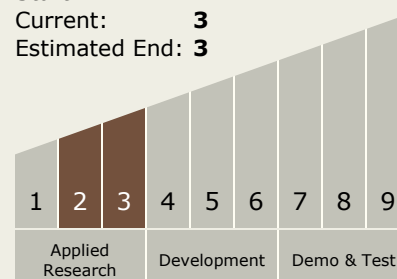
Hung D Nguyen

Principal Investigator:

Shayan Mookherjea

Technology Maturity (TRL)

Start: 2
Current: 3
Estimated End: 3



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Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
 - └ TX05.1 Optical Communications
 - └ TX05.1.6 Optimetrics

Target Destination

Earth